

Cochlochila Stål (Heteroptera): descriptions of a new subgenus and nine new species (African Tingidae XXVII)

by

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The taxonomic characters used to separate the genera *Cochlochila* Stål and *Naochila* Drake are discussed. The genus *Cochlochila* is subdivided into three subgenera. A new subgenus, *Cochlochila* (*Kibongoto*), is erected for *C. kilimensis* Horváth and six other species. The name *Physodictyon* is withdrawn from synonymy for the subgenus containing *C. lewisi* (Scott). *C. nilgiriensis* (Distant) is removed from *Cochlochila*. Keys to the species of each subgenus are given. Nine new species are described: *C. (C.) dispar*, *C. (C.) multipilosa*, *C. (C.) minuscula*, *C. (C.) theroni*, *C. (C.) austroafricana*, *C. (C.) nemesiae*, *C. (C.) ampliata*, *C. (C.) longispinosa*, *C. (Kibongoto) bamendana*. Further distribution data and host-plants are recorded.

Since my paper on the genera *Cochlochila* Stål and *Naochila* Drake (Duarte Rodrigues 1979), I have received many more specimens of Afro-tropical Tingidae, among which there are several species of *Cochlochila*. The material referred to in the text is deposited in the following institutions (abbreviations in parentheses): American Museum of Natural History, New York, U.S.A. (AMNH); British Museum (Natural History), London, England (BMNH); National Collection of Insects, Pretoria (NCI); South African Museum, Cape Town (SAM); and University of Stellenbosch, Stellenbosch (US). Duplicate specimens have been retained in the author's collection.

COCHLOCHILA Stål

Monanthia (*Cochlochila*) Stål 1873

Stål (1873: 133) erected *Cochlochila* as a subgenus of *Monanthia* Le Peletier & Serville for his new species *Monanthia* (*Cochlochila*) *bullita*. Horváth (1910) elevated the subgenus to the status of genus. Since then several species have been described and included in the genus.

Drake (1957) erected the genus *Naochila* for *C. boxiana* Drake, *C. bukobana* Drake, *C. natalana* Drake, *C. parvella* Drake and also *Monanthia kivuensis* Schouteden. Linnavuori (1977) transferred *C. adenana* Drake and *C. exolenta* Drake to the genus *Naochila*. The author (Duarte Rodrigues 1979) transferred the species *C. naivashae* Drake, *C. ituriensis* Schouteden and *C. yemenana* Drake to the genus *Naochila* as well.

In that paper I discussed the taxonomic characters proposed by Linnavuori (1977) that separate the two genera and stated that the only taxonomic character in

which they differed was the number of tumid elevations on the hemelytra. In the meantime I found another character of taxonomic significance to separate *Naochila* from *Cochlochila*. Thus these two genera can be separated as follows:

- Pronotal membranes not extending forward on their bases to anterior margin of collar (Fig. 1); boundary vein separating subcostal and discoidal areas of hemelytra with two tumid elevations **Cochlochila** Stål
- Pronotal membranes extending forward on their bases to anterior margin of collar (Fig. 2); boundary vein separating subcostal and discoidal areas of hemelytra with only one tumid elevation **Naochila** Drake

The genus *Cochlochila* shows two distinct groups of species in Africa. One has the median pronotal carina raised and areolate like a ridge on the slightly inflated hind pronotal process (Fig. 3), with lateral carinae long, extending anteriorly to calli, and median carina on both sides and lateral carinae at least on inner side densely clothed with long whitish hairs. The other group of species has the median pronotal carina low and not areolate on the slightly inflated hind pronotal process (Fig. 4), with lateral carinae short, not reaching the calli anteriorly, and carinae without hairs. These characters are constant within each group, so I regard them as being two different subgenera. As the first group includes the type-species of the genus, *C. bullita* Stål, I erect a new subgenus to include the species of the second group, below.

According to Drake & Ruhoff (1965), two other species were considered to belong to the genus *Cochlochila*, one with an East Palearctic and Oriental distribution, *C. lewisi* (Scott), and the other with a strictly Oriental distribution, *C. nilgiriensis* (Distant). Concerning the first species, I have seen the holotype of *Physodictyon vesicarius* Lindberg (Fig. 5), which was synonymized with *C. lewisi* by Drake (1948), and I consider it to belong to a third subgenus. In the same paper Drake synonymized *Physodictyon* with *Cochlochila*. However, the name *Physodictyon* remains available, and it is applied (below) as the subgeneric name for *lewisi*. The second species, *C. nilgiriensis* (Distant), described in the genus *Monanthia* and later transferred to *Cochlochila* by Drake (1948), does not belong to the latter genus as it has only one tumid elevation on the outer boundary vein of the discoidal area. Its generic status will be decided in the future, and this species is considered for the moment as a species *incertae sedis*.

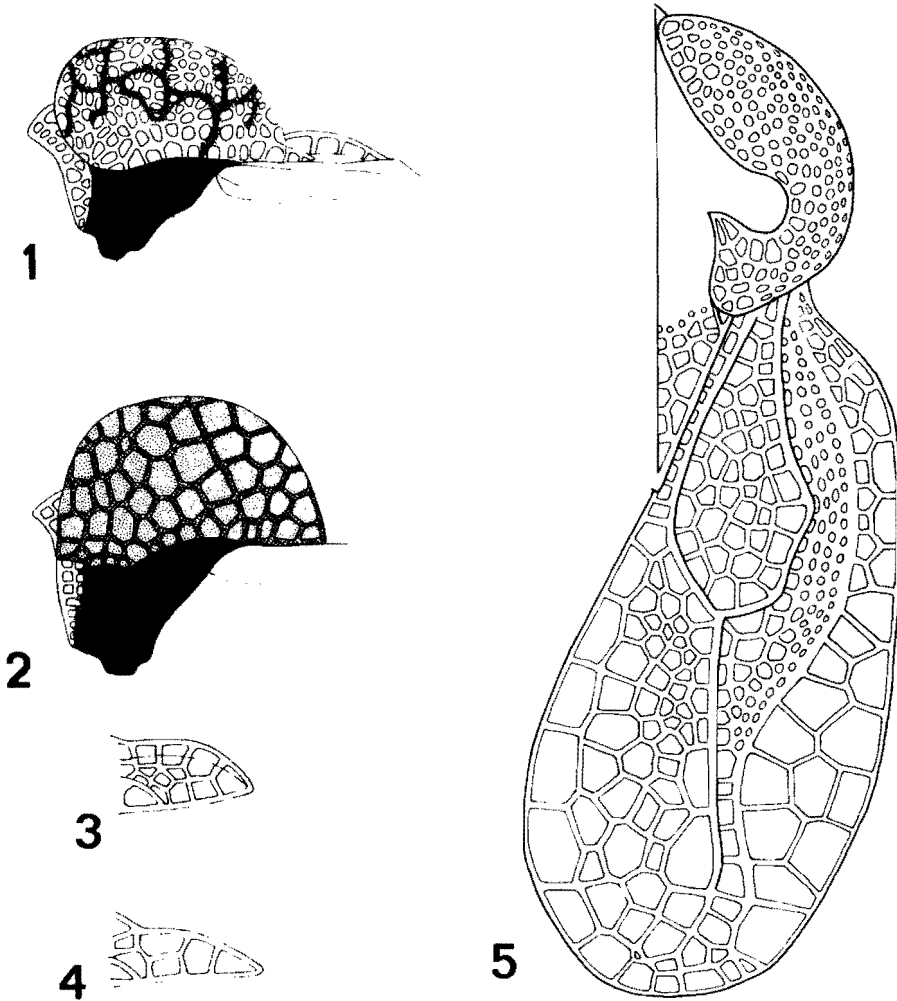
The three subgenera of *Cochlochila* can be separated as follows:

- 1 Lateral pronotal carinae long, extending anteriorly to calli; all carinae densely clothed with long whitish hairs **Cochlochila (Cochlochila)** Stål
- Lateral pronotal carinae short, terminating anteriorly just in front of middle of pronotal disc or even not reaching it; carinae without hairs or with only a few 2
- 2 Costal area of the hemelytra irregularly triseriate at base, then biseriate, sometimes three areolae deep at widest part; pronotal membranes with outer edge with a small rounded excavation just behind the level of middle of pronotal disc **Cochlochila (Physodictyon)** Lindberg, stat. nov.
- Costal area of the hemelytra entirely uniseriate or biseriate only at its widest part; pronotal membranes differently shaped **Cochlochila (Kibongoto)** subgen. nov.

COCHLOCHILA (COCHLOCHILA) Stål

Key to the species of *Cochlochila* (*Cochlochila*)

- 1 Mainly testaceous; tumid elevations of outer boundary vein of discoidal area low (Figs 6–8) 2



Figs 1–5. 1. *Cochlochila (C.) bullita* (Stål), lateral view of pronotum. 2. *Naochila boxiana* (Drake), lateral view of pronotum. 3. *Cochlochila (C.) bullita* (Stål), lateral view of hind pronotal process. 4. *Cochlochila (Kibongoto) kilimensis* Horváth, lateral view of hind pronotal process. 5. *Cochlochila (Physodictyon) lewisi* (Scott), general aspect of right side of pronotum and right hemelytra.

- Darker species; tumid elevations of outer boundary vein of discoidal area high (Figs 9–15) . . . 4
- 2 Pronotal disc, hind pronotal process and pronotal carinae very densely clothed with long whitish hairs **multipliosa** spec. nov.
- Pronotal disc and pronotal carinae not as densely clothed with long whitish hairs, hind pronotal process and carinae on hind pronotal process without hairs 3
- 3 Pronotal membranes low (Fig. 16), outer edge resting on dorsal edge of lateral carinae **dispar** spec. nov.
- Pronotal membranes higher (Fig. 17), outer edge resting above lateral carinae **zetana** Drake
- 4 Costal area of the hemelytra narrow (Figs 23–26) 5
- Costal area of the hemelytra wide (Figs 27–29) 8
- 5 Very small species (1.49–1.50 mm) **minuscula** spec. nov.
- Larger species, total length greater than 1.90 mm 6
- 6 Subcostal area four areolae deep at base; blackish **nemesiae** spec. nov.
- Subcostal area triseriate at base; not blackish 7
- 7 Pronotal membranes not very inflated (Fig. 18) **theroni** spec. nov.
- Pronotal membranes very inflated (Fig. 19) **austroafricana** spec. nov.
- 8 Pronotal membranes extended forward concealing almost all collar and head (Fig. 20), and with large areolae; head armed with long spines **longispinosa** spec. nov.
- Pronotal membranes not extended forward and not concealing the head, with small areolae; head armed with small spines 9
- 9 Larger species; outer edge of pronotal membranes widely separated from median carina at the level of middle of pronotal disc, not concealing the lateral carinae **bullita** (Stål)
- Smaller species; outer edge of pronotal membranes not widely separated from median carina at the level of middle of pronotal disc, and concealing the lateral carinae **ampliata** spec. nov.

***Cochlochila (Cochlochila) dispar* spec. nov., Fig. 30**

Head black, armed dorsally with five testaceous spines, posterior pair the longest, appressed; median spine and anterior pair directed forward. Eyes reddish-black. Bucculae brownish-testaceous, broad, areolate, closed in front. Rostrum brownish-testaceous with dark apex, extending to base of mesosternum; rostral laminae wide, testaceous, areolate, parallel on mesosternum, concave within on metasternum, open behind. Antenniferous processes with apex brownish; antennae with segments I and II brown or brownish-testaceous, segment III testaceous with apex dark brown, segment IV dark brown or black, long, slender, indistinctly pilose except segment IV; segmental measurements: I, 0.078 mm; II, 0.072 mm; III, 0.564 mm (0.516–0.648 mm); IV, 0.171 mm (0.156–0.192 mm).

Pronotum black, punctate, tricarinate. All carinae raised, uniseriate, median carina densely clothed on disc on both sides with long white hairs, raised and areolate on hind process, lateral carinae concealed on disc under reflexed pronotal membranes, extending anteriorly to calli, clothed with white hairs on inner side. Collar testaceous, areolate, very slightly raised at middle. Pronotal membranes mainly testaceous, with some veinlets brown, large, reflexed, conchate, evenly convex, with anterior part in contact with median line of hood, spread apart and opened posteriorly, outer margin in contact with upper edge of lateral carinae. Posterior process areolate. Orifice indistinct.

Hemelytra wider and longer than abdomen, the two tumid elevations on boundary vein separating subcostal and discoidal areas are low and with the veinlets of the areolae on both sides of each one brown. Costal area moderately wide, uniseriate, cross-veins brownish, areolae clear. Subcostal area biseriate, some places triseriate.

Discoidal area reaching beyond middle of hemelytra, sharply angular at base, widened posteriorly, with outer boundary vein gradually raised apically on basal two-fifths, then concavely projecting into subcostal area with boundary vein there concavely depressed, and then raised into a second tumid elevation, five areolae deep at widest part. Sutural area with larger areolae apically. Hypocostal laminae narrow, uniseriate. Metathoracic wings slightly longer than abdomen.

Body brown ventrally. Legs slender, testaceous, with apex of tibiae and tarsi brown.

Measurements: length of body: 2.09 mm (1.99–2.27 mm); maximal width (hemelytra): 1.01 mm (0.97–1.02 mm).

MATERIAL EXAMINED. ♀ Holotype, 2 paratypes, SOUTH AFRICA: Cape Province, Worcester, i.1934, R. E. Turner; 5 paratypes, Cape Province, Calvinia, 2.i.1978, J. G. Theron. Holotype in BMNH, paratypes in the same institution, in SAM, in US and in the author's collection.

This new species is very closely allied to *C. (C.) zetana* Drake but differs from it by the lower pronotal membranes and by the biseriate or only partially triseriate subcostal area of the hemelytra. It differs from *C. (C.) multipilosa* spec. nov., described below, also by the lower pronotal membranes and by the carinae on the hind pronotal process, which lack long hairs.

Cochlochila (Cochlochila) zetana Drake

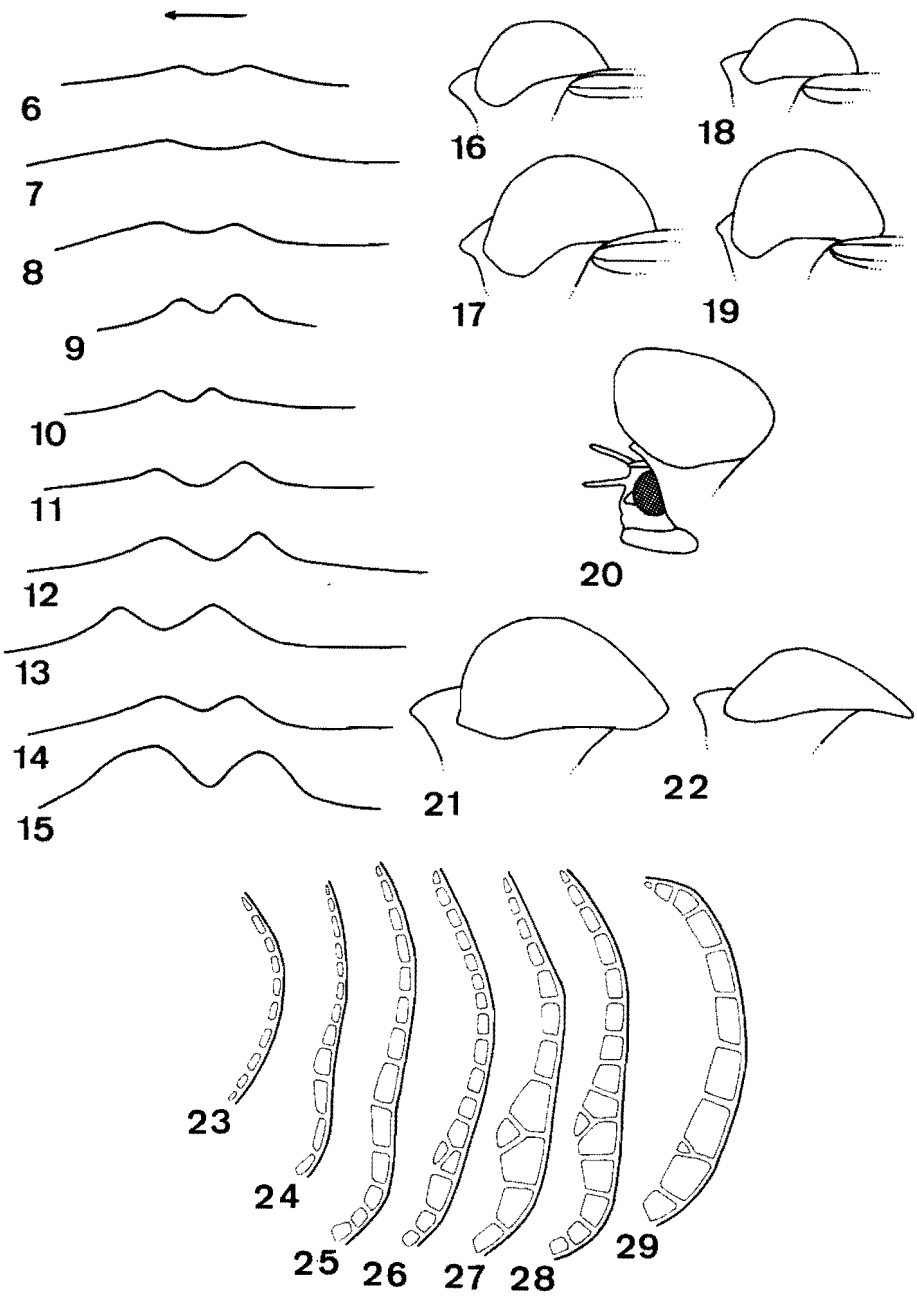
Cochlochila zetana Drake, 1954: 70.

MATERIAL EXAMINED. SOUTH AFRICA: Cape Province: Ceres, Karoo, 2.ii.1978, J. G. Theron, 1 ex. (US); Katberg, 4000 ft., xii.1932, R. E. Turner, 2 ex. (BMNH); Katberg, 15–30.i.1933, R. E. Turner, 3 ex. (BMNH); Mossel Bay, 3.i.1939, R. E. Turner, 1 ex. (BMNH); Tulbagh, Nuwekloof, 1.ix.1973, J. G. Theron, 2 ex. (US); Wellington, 21.ix.1979, J. G. Theron, 8 ex. (US); Worcester, i.1929, R. E. Turner, 1 ex. (BMNH); Orange Free State: Edenburg, 12.vii.1977, J. M. Herrmann, 1 ex. (US); Edenburg, 29.xii.1977, J. M. Herrmann, 1 ex. (US); Hendrik Verwoerd Dam, 12.iii.1969, A. Pienaar, 3 ex. (NCI). SOUTH WEST AFRICA: Okahandja, 2–4.ii.1972, general sweeping, Southern African Expedition, 2 ex. (BMNH); Swakop R., 3 mls. S. Okahandja, 7.iv.1972, floating refuse at height of flood, Southern African Expedition, 1 ex. (BMNH).

Previously known only from South Africa and now recorded from South West Africa as well.

Cochlochila (Cochlochila) multipilosa spec. nov., Fig. 31

Head black, armed with five moderately long testaceous spines, posterior pair the longest, appressed, median spine and anterior pair directed forward. Eyes blackish. Bucculae light brown with testaceous margins, broad, areolate, closed in front. Rostrum brownish-testaceous with dark apex, extending to posterior margin of mesosternum; rostral laminae wide, testaceous, areolate, parallel on mesosternum, concave within on metasternum, open behind. Antenniferous processes brown; antennae testaceous with segment IV black, long, slender, indistinctly pilose, segment IV with longer



hairs; segmental measurements: I, 0,084 mm; II, 0,084 mm; III, 0,552 mm; IV, 0,216 mm.

Pronotum apparently dark brown, punctate, tricarinate, all carinae on both sides, pronotal disc and hind process very densely clothed with long whitish hairs which conceal the pronotal surface. All carinae raised, uniseriate, median carina raised and areolate on hind process, lateral carinae long, extending anteriorly to calli, concealed on disc by the reflexed pronotal membranes. Collar testaceous, areolate, slightly raised in middle, slightly produced in front. Pronotal membranes mainly testaceous, with some veinlets brown, large, reflexed, conchate, high, evenly convex, with exterior edge in contact in front over median carina, spread apart and opened posteriorly. Posterior process areolate, almost concealed by the long hairs which clothe the veinlets and the carinae. Orifice indistinct.

Hemelytra wider and longer than abdomen, the two tumid elevations on boundary vein separating subcostal and discoidal areas low. Costal area slightly reflexed obliquely upward, large, uniseriate, cross-veins brown, areolae large and clear. Subcostal area mostly four areolae deep, three areolae deep at the level of outward projection of discoidal area. The latter reaching beyond middle of hemelytra, sharply angular at base, outer boundary vein gradually raised apically on basal two-fifths, then concavely projecting into subcostal area with boundary vein there concavely depressed and then raised into a second tumid elevation, five or six areolae deep at widest part. Sutural area with larger areolae apically. Hypocostal laminae narrow, uniseriate. Metathoracic wings slightly longer than abdomen.

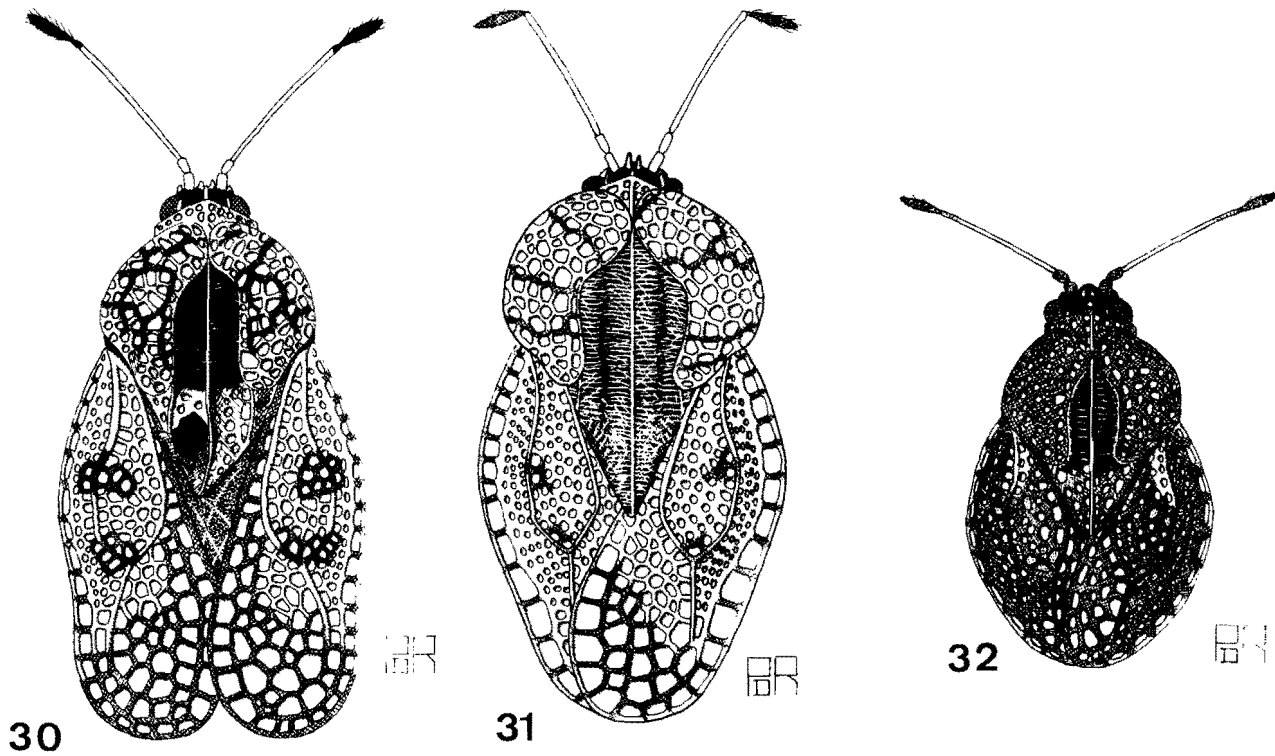
Body black ventrally. Legs slender, testaceous with tarsi blackish-brown.

Measurements: length of body: 2,15 mm; maximal width (hemelytra): 1,19 mm.

MATERIAL EXAMINED. ♀ Holotype, SOUTH AFRICA: Cape Province, Ladismith, 21.iv.1973, J. G. Theron. In SAM.

This new species differs from *C. (C.) dispar* spec. nov. and *C. (C.) zetana* Drake, the other two species with low tumid elevations on the outer boundary vein of the discoidal area, by the larger and more inflated pronotal membranes, and by the very dense vestiture of pronotal carinae and pronotal surface on the disc and hind process.

Figs 6–29. 6–15. Lateral view of outer boundary vein of discoidal area. 6. *Cochlochila (C.) dispar* spec. nov. 7. *Cochlochila (C.) zetana* Drake. 8. *Cochlochila (C.) multipilosa* spec. nov. 9. *Cochlochila (C.) minuscula* spec. nov. 10. *Cochlochila (C.) theroni* spec. nov. 11. *Cochlochila (C.) austroafricana* spec. nov. 12. *Cochlochila (C.) nemesiae* spec. nov. 13. *Cochlochila (C.) ampliata* spec. nov. 14. *Cochlochila (C.) bullita* (Stål). 15. *Cochlochila (C.) longispinosa* spec. nov. 16–22. Lateral view of pronotum. 16. *Cochlochila (C.) dispar* spec. nov. 17. *Cochlochila (C.) zetana* Drake. 18. *Cochlochila (C.) theroni* spec. nov. 19. *Cochlochila (C.) austroafricana* spec. nov. 20. *Cochlochila (C.) longispinosa* spec. nov. 21. *Cochlochila (Kibongoto) kilimensis* Horváth. 22. *Cochlochila (Kibongoto) capeneri* Drake & Slater. 23–29. Costal area of right hemelytra. 23. *Cochlochila (C.) minuscula* spec. nov. 24. *Cochlochila (C.) theroni* spec. nov. 25. *Cochlochila (C.) austroafricana* spec. nov. 26. *Cochlochila (C.) nemesiae* spec. nov. 27. *Cochlochila (C.) ampliata* spec. nov. 28. *Cochlochila (C.) bullita* (Stål). 29. *Cochlochila (C.) longispinosa* spec. nov.



Figs 30–32. 30. *Cochlochila* (C.) *dispar* spec. nov. 31. *Cochlochila* (C.) *multipilosa* spec. nov. 32. *Cochlochila* (C.) *minuscula* spec. nov.

***Cochlochila (Cochlochila) minuscula* spec. nov., Fig. 32**

Head black, armed with four very small brownish-testaceous spines, median spine wanting or tubercle-like and blackish. Eyes black. Bucculae black, broad, areolate, closed in front. Rostrum brownish with dark apex, reaching almost to posterior margin of mesosternum; rostral laminae brownish-testaceous, wide, areolate, parallel on mesosternum, concave within on metasternum. Antenniferous processes black, small; antennae with segments I, II and IV dark brown, segment III brownish-testaceous with apex brown; segmental measurements: I, 0,060 mm; II, 0,060 mm; III, 0,408–0,492 mm; IV, 0,132–0,144 mm.

Pronotum black, punctate, tricarinate. All carinae raised, uniseriate, median carina on disc densely clothed on both sides with long whitish hairs, raised and areolate on posterior process, lateral carinae concealed on disc under the reflexed pronotal membranes, extending anteriorly to calli, clothed with long whitish hairs on inner side. Collar with veinlets blackish-brown, areolate, very slightly raised at middle. Pronotal membranes with veinlets blackish and areolae infusate, large, reflexed, conchate, evenly convex, with exterior edge in contact with median carina anteriorly, diverging and becoming widely separated from median carina posteriorly, not in contact with pronotal surface. Posterior process with veinlets blackish-brown, areolate. Orifice indistinct.

Hemelytra with most veinlets dark brown or blackish-brown, areolae on both sides of each tumid elevation infusate, those tumid elevations moderately high. Costal area moderately wide, reflexed obliquely upward, uniseriate, the areolae clear. Subcostal area biseriate at base, then triseriate, four or five areolae deep opposite apex of discoidal area. The latter almost two-thirds as long as hemelytra, sharply angular at base, widened posteriorly, with outer boundary vein gradually raised apically on basal two-fifths, then deeply concavely projecting into subcostal area with boundary vein there concavely depressed, and then raised into a second tumid elevation, five or six areolae deep at widest part. Sutural area narrow, with larger areolae apically. Hypocostal laminae narrow, uniseriate.

Body black ventrally. Legs slender, femora dark brown with apex brownish-testaceous, tibiae brownish-testaceous with base and apex dark brown, tarsi dark brown.

Measurements: length of body: 1,49–1,50 mm; maximal width (hemelytra): 0,94–0,96 mm.

MATERIAL EXAMINED. ♀ Holotype, SOUTH AFRICA: Cape Province, Ceres, 25.xi.1971, J. G. Theron; 1 paratype, Cape Province, Rawsonville, 16.i.1971, J. G. Theron. Holotype in SAM and paratype in US.

The very small size and small antennae distinguish this new species from all the other species of the subgenus.

***Cochlochila (Cochlochila) theroni* spec. nov., Fig. 33**

Head black, armed dorsally with four or five spines, posterior and anterior pairs brownish-testaceous, small, median spine tuberculiform or lacking. Eyes black. Bucculae brown, broad, areolate, closed in front. Rostrum brownish-testaceous with

dark apex, extending almost to middle of metasternum; rostral laminae brownish-testaceous, wide, areolate, parallel on mesosternum, concave within on metasternum, open behind. Antenniferous processes black, small; antennae with segments I and II dark brown, segment III brownish-testaceous, segment IV black; segmental measurements: I, 0,060 mm; II, 0,072 mm; III, 0,561 mm (0,528–0,576 mm); IV, 0,183 mm (0,180–0,192 mm).

Pronotum black, punctate, tricarinate. All carinae raised, uniseriate, median carina densely clothed on both sides with long whitish hairs on disc, raised and areolate on hind process, lateral carinae concealed on disc under the reflexed pronotal membranes, extending anteriorly to calli, clothed with long whitish hairs on inner side. Collar with veinlets dark brown, areolate, very slightly raised in middle. Pronotal membranes with most veinlets dark brown and areolae infuscate, large, reflexed, concave, evenly convex, with exterior edge in contact with median carina anteriorly, diverging and becoming widely separated from median carina posteriorly, not in contact with pronotal surface. Posterior process with veinlets dark brown, areolate, veinlets with long whitish hairs. Orifice indistinct.

Hemelytra wider and longer than abdomen, the two tumid elevations on boundary vein separating subcostal and discoidal areas moderately high. Costal area moderately wide, uniseriate, cross-veins dark brown, areolae clear. Subcostal area with veinlets brown, triseriate, four or five areolae deep opposite apex of discoidal area. The latter with most veinlets brown, the others dark brown, reaching beyond middle of hemelytra, sharply angulate at base, widened posteriorly, with outer boundary vein gradually raised apically on basal two-fifths, then deeply concavely projecting into subcostal area with boundary vein there concavely depressed, and then raised again into a second tumid elevation, four or five areolae deep at widest part. Sutural area with larger areolae apically, the veinlets brown. Hypocostal laminae narrow, uniseriate. Metathoracic wings longer than abdomen.

Body black ventrally. Legs brownish-testaceous, femora with a broad dark brown cross-band, tarsi blackish-brown.

Measurements: length of body: 1,93 mm (1,90–1,95 mm); maximal width (hemelytra): 0,86 mm (0,84–0,89 mm).

MATERIAL EXAMINED. ♂ Holotype, 2 paratypes, SOUTH AFRICA: Cape Province, Rawsonville, 16.i.1971, J. G. Theron; 3 paratypes, Cape Province, Ceres, 25.xi.1971, J. G. Theron [one of the paratypes from Ceres is a teneral specimen and one other has teratologic pronotal membranes]. Holotype in SAM, paratypes in US and in the author's collection.

This new species differs from *C. (C.) austroafricana* spec. nov. and *C. (C.) nemesiae* spec. nov., both new species described below, by its smaller size and less inflated pronotal membranes. It is named in honour of Dr J. G. Theron (University of Stellenbosch), who collected the material and also specimens of five of the other new species.

***Cochlochila (Cochlochila) austroafricana* spec. nov., Fig. 34**

Head black, armed dorsally with four or five spines, posterior pair testaceous, appressed, median spine black, tuberculiform or lacking, anterior spines testaceous, directed forward. Eyes black. Bucculae black with margins dark brown, broad, areolate,

closed in front. Rostrum dark brown with black apex, extending to base of mesosternum; rostral laminae testaceous or brown, wide, areolate, subparallel on mesosternum, concave within on metasternum, open behind. Antenniferous processes black, small; antennae with segments I and II brown or dark brown, segment III brownish-testaceous, segment IV black; segmental measurements: I, 0,084 mm; II, 0,084 mm; III, 0,708 mm (0,660–0,732 mm); IV, 0,216 mm.

Pronotum black, punctate, tricarinate. All carinae raised, uniseriate, median carina on disc densely clothed on both sides with long whitish hairs, raised and areolate on posterior process, lateral carinae concealed on disc under the reflexed pronotal membranes, extending anteriorly to calli, clothed with long whitish hairs on inner side. Collar with veinlets dark brown and anterior margin testaceous, areolate, very slightly raised at middle. Pronotal membranes with veinlets dark brown or blackish-brown and areolae infusate, large, reflexed, conchate, evenly convex, with exterior edge in contact with median carina anteriorly, diverging and becoming widely separated from median carina posteriorly, not in contact with pronotal surface. Posterior process with veinlets blackish-brown, areolate. Orifice indistinct.

Hemelytra wider and longer than abdomen, the two tumid elevations on boundary vein separating subcostal and discoidal areas moderately high. Costal area moderately wide, uniseriate or with an extra areola at widest part, cross-veinlets dark brown, areolae clear. Subcostal area with veinlets on side of the two tumid elevations deep black, areolae clear except those on side of the two tumid elevations, which are infusate, triseriate or quadriseriate at base, biseriate or triseriate at the narrower part, and four or five areolae deep opposite apex of discoidal area. The latter with most veinlets dark brown, areolae clear except those on side of the two tumid elevations, which are infusate, reaching beyond middle of hemelytra, sharply angulate at base, widened posteriorly, with outer boundary vein gradually raised apically on basal two-fifths, then deeply concavely projecting into subcostal area with boundary vein there concavely depressed, and then raised again into a second tumid elevation, five areolae deep at widest part. Sutural area with larger areolae apically, most veinlets brown, a few areolae infusate. Hypocostal laminae narrow, uniseriate. Metathoracic wings slightly longer than abdomen.

Body black ventrally. Legs slender, femora with a broad dark brown cross-band, tibiae brownish-testaceous, tarsi dark brown.

Measurements: length of body: 2,37 mm (2,15–2,50 mm); maximal width (hemelytra): 1,19 mm (1,08–1,28 mm).

MATERIAL EXAMINED. ♂ Holotype, SOUTH AFRICA: Cape Province, Karoo, Ceres, 2.ii.1978, J. G. Theron; ♀ allotype, Cape Province, Rawsonville, 7.xi.1970, J. G. Theron; 1 paratype, Cape Province, Calvinia, 2.ii.1978, J. G. Theron; 1 paratype, Cape Province, Koeberg, 6.xii.1977, J. G. Theron; 1 paratype, Cape Province, Meiringspoort, 29.i.1979, J. G. Theron. 1 paratype, SOUTH WEST AFRICA: 16 km ESE Seelis, 13.iii.1976, J. G. & B. L. Rozen. Holotype and allotype in SAM, paratypes in AMNH, in US and in the author's collection.

This new species differs from *C. (C.) theroni* spec. nov. and *C. (C.) nemesiae* spec. nov., described below, by its lighter colour; from *C. (C.) theroni* by its greater length and longer antennae; and from *C. (C.) nemesiae* by the subcostal area of the hemelytra being triseriate at base.

***Cochlochila (Cochlochila) nemesiae* spec. nov., Fig. 35**

Head black, armed with five dark brown spines, posterior pair appressed, median spine small, porrect, anterior pair directed forward. Eyes black. Bucculae black, broad, areolate, closed in front. Rostrum blackish-brown, extending beyond mesosternum; rostral laminae black, wide, areolate, parallel on mesosternum, concave within on metasternum, open behind. Antenniferous processes black, small; antennae with segments I, II and IV blackish-brown, segment III brown; segmental measurements: I, 0,084 mm (♂) or 0,072 mm (♀); II, 0,096 mm (♂) or 0,084 mm (♀); III, 0,840 mm (♂) or 0,744 mm (♀); IV, 0,216 mm (♀).

Pronotum black, punctate, tricarinate. All carinae raised, uniseriate, median carina on disc densely clothed on both sides with long whitish hairs, raised and areolate on posterior process, lateral carinae concealed on disc under the reflexed pronotal membranes, extending anteriorly to calli, clothed with long whitish hairs on inner side. Collar with veinlets black, areolate, very slightly raised at middle. Pronotal membranes with veinlets black and areolae infusate, large, reflexed, conchate, evenly convex, with exterior edge in contact with median carina anteriorly, diverging and becoming widely separated from median carina posteriorly, not in contact with pronotal surface. Posterior process with veinlets black, areolate. Orifice indistinct.

Hemelytra with veins and veinlets blackish-brown, the two tumid elevations on boundary vein separating subcostal and discoidal areas moderately high, areolae on both sides of each tumid elevation infusate. Costal area moderately wide, uniseriate, the areolae clear. Subcostal area quadriseriate or irregularly triseriate basally, triseriate or irregularly biseriate at narrower part, four or five areolae deep opposite apex of discoidal area. The latter reaching beyond middle of hemelytra, sharply angular at base, widened posteriorly, with outer boundary vein gradually raised apically on basal two-fifths, then deeply concavely projecting into subcostal area with boundary vein concavely depressed there, and then raised in a second tumid elevation, five or six areolae deep at widest part. Sutural area with larger areolae apically. Hypocostal laminae narrow, uniseriate. Metathoracic wings slightly longer than abdomen.

Body black ventrally. Legs slender, dark brown.

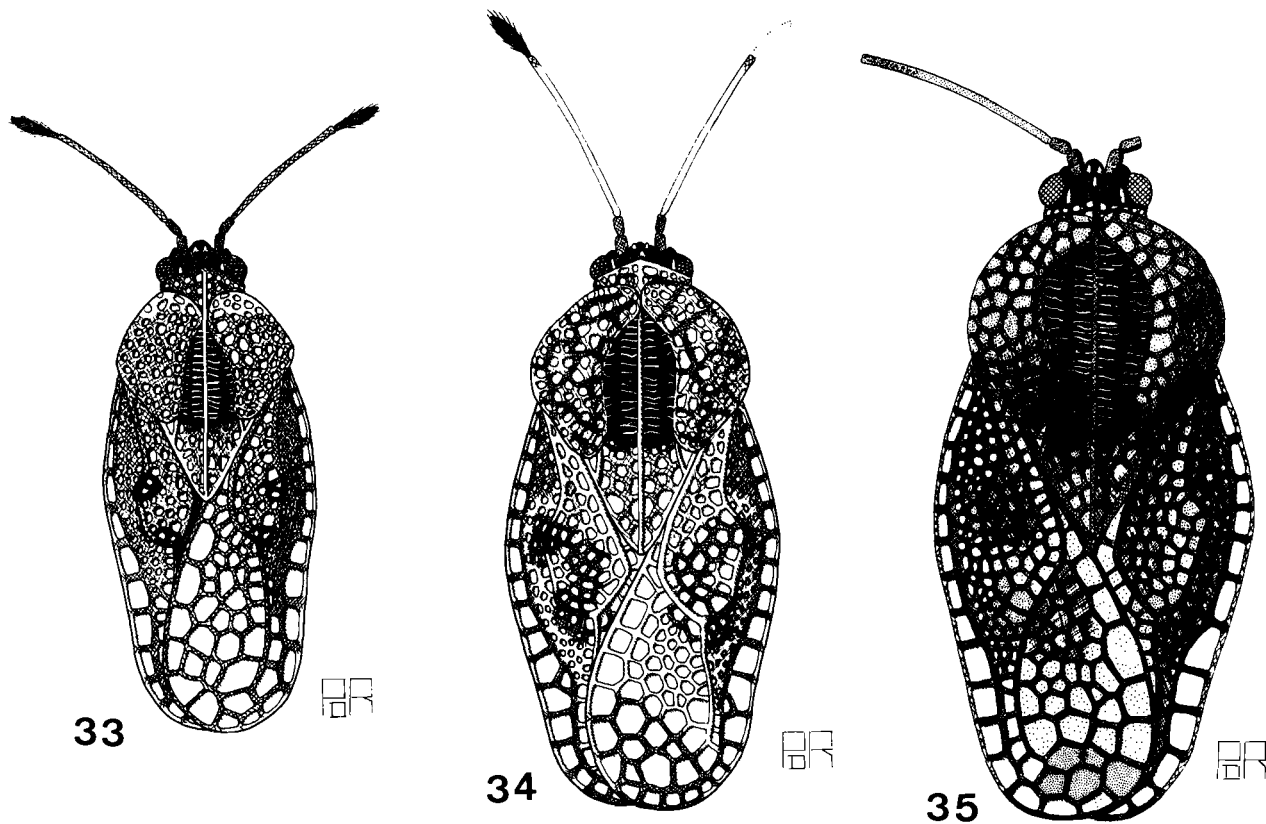
Measurements: length of body: 2,45 mm (♂) or 2,57 mm (2,55–2,58 mm) (♀); maximal width (hemelytra): 1,26 mm (♂) or 1,44–1,46 mm (♀).

MATERIAL EXAMINED. ♂ Holotype, ♀ allotype, 2 paratypes, SOUTH AFRICA: Cape Province, Oudtshoorn, 21.x.1964, A. L. Capener, on *Nemesia capensis*. Holotype, allotype and 1 paratype in NCI and 1 paratype in the author's collection.

This new species differs from *C. (C.) theroni* spec. nov. and *C. (C.) austroafricana* spec. nov. by the broader subcostal area of the hemelytra four areolae deep basally and by its blackish colour.

***Cochlochila (Cochlochila) ampliata* spec. nov., Fig. 36**

Head black, armed with three spines, the anterior pair small, the median spine tubercle-like, the posterior pair wanting. Eyes black. Bucculae blackish-brown, broad, areolate, closed in front. Rostrum brownish-testaceous with dark apex, extending to base of mesosternum; rostral laminae wide, brownish-testaceous, areolate, parallel on mesosternum, concave within on metasternum, open behind. Antenniferous pro-



Figs 33–35. 33. *Cochlochila* (*C.*) *theroni* spec. nov. 34. *Cochlochila* (*C.*) *austroafricana* spec. nov. 35. *Cochlochila* (*C.*) *nemesiae* spec. nov.

cesses black; antennae testaceous, segment IV brown excepting base, long, slender, indistinctly pilose except segment IV; segmental measurements: I, 0,084 mm; II, 0,084 mm; III, 0,708 mm; IV, 0,228 mm.

Pronotum black, punctate, tricarinate. All carinae raised, uniseriate, median carina densely clothed on both sides on disc with long whitish hairs, raised and areolate on hind process, lateral carinae concealed on disc under the reflexed pronotal membranes, extending anteriorly to calli, clothed with whitish hairs on inner side. Collar testaceous, areolate, raised at middle so as to form a small hood. Pronotal membranes with areolae dark infusate and veinlets brown, in lateral view some veinlets are dark brown giving a reticulate appearance, large, reflexed, conchate, evenly convex, with anterior part touching each other over median carina, widely spread apart medially and then closer posteriorly, outer margin not in contact with pronotal surface. Posterior process inflated, areolate, with dark brown veinlets. Orifice indistinct.

Hemelytra wider and longer than abdomen, the two tumid elevations on boundary vein separating subcostal and discoidal areas very high and with the areolae and veinlets on both sides of each one dark fuscous. Costal area very wide, uniseriate, with an extra areola behind apex of discoidal area, cross-veins fuscous, areolae clear. Subcostal area mostly biseriate, some places triseriate, four areolae deep behind apex of discoidal area. The latter reaching beyond middle of hemelytra, sharply angular at base, widened posteriorly with apex rounded, with outer boundary vein gradually raised apically on basal two-fifths, then deeply concavely projecting into subcostal area with boundary vein there concavely depressed, and then raised into a second tumid elevation, four or five areolae deep at widest part. Sutural area large with some areolae on hind part clouded with fuscous, areolae larger apically. Hypocostal laminae uniseriate. Metathoracic wings slightly longer than abdomen.

Body black ventrally. Legs slender, brownish, with tibiae testaceous.

Measurements: length of body: 2,52 mm (2,42–2,58 mm); maximal width (hemelytra): 1,34 mm (1,26–1,43 mm).

MATERIAL EXAMINED. ♀ Holotype, 2 paratypes, SOUTH WEST AFRICA: Aus, 8–30.xi.1929, R. E. Turner. Holotype and 1 paratype in BMNH and 1 paratype in the author's collection.

This new species differs from the other two species of the subgenus with high tumid elevations on outer boundary vein of discoidal area and large costal area, *C. (C.) bullita* (Stål) and *C. (C.) longispinosa* spec. nov., described below, by the pronotal membranes concealing the lateral carinae on pronotal disc.

Cochlochila (*Cochlochila*) *bullita* (Stål)

Monanthia (**Cochlochila**) *bullita* Stål, 1873: 133.

MATERIAL EXAMINED. SOUTH AFRICA: Natal: Malvern, 5.vi.1897, 1 ex. (BMNH); Port Shepstone, 29.v.1897, 17 ex. and 1 Vth instar nymph (BMNH); Orange Free State: Hendrik Verwoerd Dam, 19.xi.1969, A. L. Capener, 4 Vth instar nymphs (NCI); Hendrik Verwoerd Dam, 21.xi.1969, A. L. Capener, 27 ex. and 6 Vth instar nymphs (NCI); Hendrik Verwoerd Dam, 20–29.xi.1969, A. L. Capener, 1 ex. (NCI); Transvaal: Hartbeespoort, 10.iii.1966, P. Paliatseas, on *Ocimum urticifolium*, 7 ex. (NCI); Skukuza, 13.xii.1971, M. Trap, E. Holm, 1 ex. (NCI); Vivo, xii.1978,

C. Kok and S. J. van Tonder, 1 ex. (NCI). SUDAN: Khartoum, 27.i.1935, W. Rutledge, on *Salvia coccinea*, 1 ex. (BMNH).

Widely distributed. Already known from South Africa and Sudan.

***Cochlochila (Cochlochila) longispinosa* spec. nov., Fig. 37**

Head black, armed with five black spines, posterior pair the smallest, median spine and anterior pair long, posterior and anterior spines directed forward, median spine directed obliquely upward, almost the whole head concealed by the inflated and reflexed pronotal membranes. Eyes blackish. Bucculae black, broad, areolate, closed in front. Rostrum blackish-brown, extending almost to posterior margin of metasternum; rostral laminae black, areolate, parallel on mesosternum, concave within on metasternum, open behind. Antenniferous processes black; antennae with segments I and II and base of segment III blackish-brown, segment III testaceous with apex brownish-testaceous, segment IV black, segment III curved outwardly, shortly pilose; segmental measurements: I, 0.096 mm; II, 0.096 mm; III, 0.683 mm (0.624–0.780 mm); IV, 0.281 mm (0.240–0.324 mm).

Pronotum black, punctate, tricarinate. All carinae raised, uniseriate, median carina densely clothed on both sides on disc with white hairs, raised and areolate on hind process, lateral carinae extending anteriorly to calli, clothed with white hairs on inner side. Collar with veinlets blackish-brown, almost all concealed by the pronotal membranes, raised at middle so as to form a small hood. Pronotal membranes with large areolae and blackish-brown veinlets, large, reflexed, conchate, with outer margins meeting anteriorly over median carina, then very widely spread apart medially showing lateral carinae and lateral sides of pronotum, and closer posteriorly covering humeral angles and lateral carinae, outer margin resting far from pronotal surface on disc. Posterior process inflated, areolate, with blackish-brown veinlets. Orifice indistinct.

Hemelytra wider and longer than abdomen, with posterior apex directed obliquely upward, sutural areas not meeting or overlapping each other at least on the basal two-fifths of the hemelytra, the two tumid elevations on outer boundary vein of discoidal area very high and large, with the areolae on both sides of each dark fuscous, almost all the veinlets blackish-brown. Costal area very wide, uniseriate, cross-veins blackish-brown, the areolae large and clear. Subcostal area triseriate at base, four areolae deep at the level of the two tumid elevations and two or three areolae deep between them. Discoidal area reaching beyond middle of hemelytra, sharply angular at base, widened posteriorly with apex rounded, with outer boundary vein gradually raised apically on basal two-fifths, then deeply concavely projecting into subcostal area with boundary vein there deeply concavely depressed, and then raised into a second tumid elevation, four or five areolae deep between the two tumid elevations. Sutural area narrow. Hypocostal laminae uniseriate. Metathoracic wings absent.

Body black ventrally. Legs slender, with femora, base of tibiae and tarsi blackish-brown, tibiae brownish-testaceous.

Measurements: length of body: 2.11 mm (1.90–2.24 mm); maximal width (hemelytra): 1.40 mm (1.26–1.48 mm) (♂) or 1.62 mm (1.54–1.68 mm) (♀).

MATERIAL EXAMINED. ♂ Holotype, ♀ allotype, 14 paratypes, SOUTH AFRICA: Cape Province, Cedarberg, Clanwilliam, 21.xii.1976, J. G. Theron, on *Salvia*. Holotype and allotype in SAM, paratypes in US and in the author's collection.

This new species differs from *C. (C.) ampliata* spec. nov. and *C. (C.) bullita* (Stål), the other two species of the subgenus with high tumid elevations on the outer boundary vein of the discoidal area and large costal area, by the head armed with long spines and by the pronotal membranes prolonged forward so as to conceal almost the whole head and collar.

COCHLOCHILA (KIBONGOTO) subgen. nov.

Type-species: *Cochlochila (Kibongoto) kilimensis* Horváth, 1910.

Very similar to *Cochlochila (Cochlochila)* but with median pronotal carina low and non-areolate on hind pronotal process, lateral carinae short, terminating anteriorly just in front of middle of pronotal disc or even not reaching it, pronotal carinae not hairy.

Key to the species of *Cochlochila (Kibongoto)*

- 1 Pronotal membranes and hemelytra mainly blackish-brown **nigrinervis** Rodrigues
- Pronotal membranes and hemelytra mainly testaceous 2
- 2 Pronotal membranes very inflated (Fig. 21) 3
- Pronotal membranes low, only slightly inflated (Fig. 22) 4
- 3 Larger species, total length: 3,25–3,50 mm **kilimensis** Horváth
- Smaller species, total length: 2,75 mm **bequaerti** Schouteden
- 4 Larger species, total length: 3,10 mm (♂) or 3,65 mm (♀) **aemula** Drake
- Smaller species, total length not more than 3,00 mm 5
- 5 Pronotal membranes with exterior edge widely separated from median carina posteriorly, broadly constricted at middle **capeneri** Drake & Slater
- Pronotal membranes with exterior edge less separated from median carina posteriorly and not constricted at middle 6
- 6 Pronotal membranes lower, with exterior edge resting on pronotal disc surface; broader species **bamendana** spec. nov.
- Pronotal membranes higher, with exterior edge resting on dorsal edge of lateral carinae; narrower species **fiziana** Rodrigues

Cochlochila (Kibongoto) kilimensis Horváth

Cochlochila kilimensis Horváth, 1910: 67.

MATERIAL EXAMINED. ZIMBABWE: Gwebi, 7 iii.1951, H. K. Munro, 1 ex. (NCI).

Known from Tanzania, Kenya, Zaire, Zambia and Sudan. Newly recorded from Zimbabwe.

Cochlochila (Kibongoto) capeneri Drake & Slater

Cochlochila capeneri Drake & Slater, 1955: 49.

MATERIAL EXAMINED. SOUTH AFRICA: Natal: Drakensberg, Van Reenen, 55–6500 ft., x.1925, R. E. Turner, 1 ex. (BMNH); Transvaal: Nebo, 11.i.1965, M. Hoffmann, sweeping, 2 ex. (NCI); Pretoria, 14.xii.1951, H. K. Munro, 1 ex. (NCI); Tiegpoort, 4.xii.1970, A. Pienaar, 1 ex. (NCI). ZIMBABWE: Salisbury, G. A. K. Marshall, 6 ex. (BMNH).

This species was known only from South Africa. It is recorded from Zimbabwe for the first time.

***Cochlochila (Kibongoto) bamendana* spec. nov., Fig. 38**

Head black, armed dorsally with five testaceous spines, posterior pair reaching the level of anterior margin of eyes, appressed, median spine porrect, anterior pair directed forward. Eyes blackish. Bucculae black with testaceous margins, areolate, closed in front. Rostrum brownish-testaceous with dark apex, scarcely extending beyond anterior margin of metasternum; rostral laminae low, uniseriate, subparallel on mesosternum, wider on metasternum. Antenniferous processes with testaceous apices; antennae testaceous with apical three-fifths of segment IV dark brown, long, slender, indistinctly pilose except segment IV; segmental measurements: I, 0,096 mm; II, 0,108 mm; III, 0,732 mm; IV, 0,240 mm.

Pronotum black, punctate, tricarinate. Median carina raised, uniseriate, lower and without areolae on hind process, lateral carinae concealed on disc under the reflexed pronotal membranes. Collar testaceous, areolate, very slightly raised at middle. Pronotal membranes mainly testaceous, with some veinlets brown, large, reflexed, conchate, with anterior part in contact with median carina, spread apart and open posteriorly, outer margin in contact with pronotal surface only in front. Posterior process areolate. Orifice indistinct.

Hemelytra wider and longer than abdomen. Costal area with cross-veins brown, wide, uniseriate, sometimes with an extra areola at widest part. Subcostal area with some veinlets brown, the others testaceous, mostly triseriate, biseriate opposite widest part of discoidal area. The latter testaceous with some veinlets brown, reaching beyond middle of hemelytra, sharply angular at base, widened posteriorly, with outer boundary vein gradually raised apically on basal two-fifths, then deeply concavely projecting into subcostal area with boundary vein there concavely depressed, and then raised into a second tumid elevation, four or five areolae deep at widest part. Sutural area large with some veinlets of apical part brown and most of the areolae clouded with fuscous, areolae larger apically. Hypocostal laminae uniseriate. Metathoracic wings fuscous, almost as long as hemelytra.

Body black ventrally. Legs slender, testaceous, with tip of tarsi brown.

Measurements: length of body: 2,79 mm; maximal width (hemelytra): 1,27 mm.

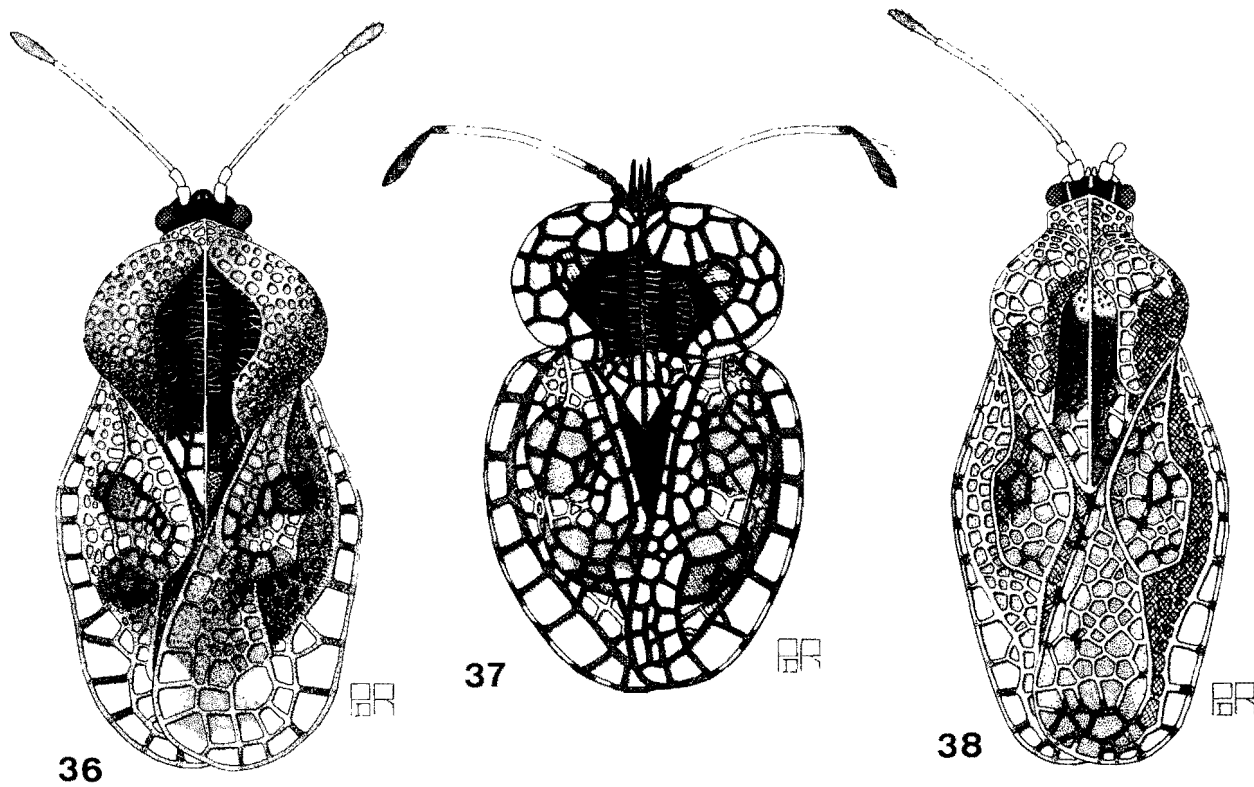
MATERIAL EXAMINED. ♀ Holotype, CAMEROON: Bamenda, 10.xii.1955, Exped. Mus. G. Frey Nigeria-Kamerun, Bechyne 1955-56. Holotype in BMNH.

This new species is similar in size to *C. (Kibongoto) bequaerti* Schouteden and *C. (K.) capeneri* Drake & Slater; it differs from *C. (K.) bequaerti* by its lower and less inflated pronotal membranes; from *C. (K.) capeneri* by its higher median pronotal carina, its wider costal area of the hemelytra and by its pronotal membranes with the exterior edge less separated from median carina posteriorly.

***COCHLOCHILA (PHYSODICTYON)* Lindberg, stat. nov.**

***Physodictyon* Lindberg, 1927: 16.**

As stated above this subgenus includes only one species, *Cochlochila (Physodictyon) lewisi* (Scott), with an East Palearctic and Oriental distribution.



Figs 36–38. 36. *Cochlochila* (C.) *ampliata* spec. nov. 37. *Cochlochila* (C.) *longispinosa* spec. nov. 38. *Cochlochila* (Kibongoto) *bamendana* spec. nov.

ACKNOWLEDGEMENTS

I am greatly indebted to Drs W. R. Dolling (BMNH), M. W. Mansell (NCI), R. T. Schuh (AMNH), and J. G. Theron (US) for the privilege of studying the specimens included in this paper; sincere appreciation is extended to Dr A. Albrecht (Zoological Museum of the University, Helsinki, Finland) and again to Dr W. R. Dolling for the loan of the types of *Physodictyon vesicarius* Lindberg and *Monanthia nilgiriensis* Distant.

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